

GD-081-PHS-EMS: Recommendations for EMT-B Use of an Esophageal Tracheal Double Lumen Airway Device (ETDLAD)

INTRODUCTION

The esophageal tracheal double lumen airway device (ETDLAD) is designed for use in emergency situations, can be inserted blindly, and can be used to ventilate a patient whether inserted into the esophagus or the trachea.

The Arizona Department of Health Services (ADHS) views the ETDLAD as a useful tool for prehospital airway management and has added use of an ETDLAD to the EMT-B scope of practice as an optional skill acquired through prescribed training. This document provides information about the ETDLAD design and function and ADHS's recommendations for EMT-B use of an ETDLAD in the prehospital EMS environment. ADHS intends for this document to be a guideline for the prescribed training under A.A.C. R9-25-511(C).

ETDLAD DESIGN AND FUNCTION

The ETDLAD is a device that combines an esophageal obturator lumen (longer tube) with a tracheal lumen (shorter tube) and features a large esophageal balloon approximately at midpoint and a smaller distal cuff at the distal end of the device (each with a connecting tube for inflation). The esophageal obturator lumen is blocked at the distal end and has perforations at the pharyngeal level. The tracheal lumen is open at both ends. When inflated, the oropharyngeal balloon seals the mouth and nose, and the distal cuff seals either the esophagus or trachea (depending on ETDLAD placement). When the ETDLAD is placed in the esophagus, ventilation is accomplished through the esophageal obturator lumen when air blown in escapes the esophageal lumen through the perforations, enters the pharynx, is blocked by the oropharyngeal balloon and distal cuff, and is thus forced into the trachea. When the ETDLAD is placed in the trachea, ventilation is accomplished through the tracheal lumen by blowing air directly into the trachea.

RECOMMENDATIONS FOR EMT-B USE OF AN ETDLAD

Indications:

Cardiac arrest or apnea

Contraindications:

Intact gag reflex
Height less than 4 feet
Known esophageal pathology
Recent ingestion of a caustic substance
Central airway obstruction

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Advantages:

- Non invasive
- Helpful under difficult circumstances of space and light
- Blind insertion possible
- Simultaneous fixation after inflation of oropharyngeal balloon
- Effective in tracheal or esophageal position
- Minimized risk of aspiration
- No need for electrical power supply

Potential Complications:

- Increased incidence of sore throat, dysphagia, and upper airway hematoma (compared to endotracheal intubation and laryngeal mask airway)
- Esophageal rupture (rare)
- Barotrauma possible

Available Sizes:

- Small ETDLAD (37 F) recommended for use with patients 4 - 5.5 feet tall
- Large ETDLAD (41 F) recommended for use with patients 5 feet tall and taller

Insertion Procedure:

1. Select appropriate size ETDLAD based on patient height.
2. Test the oropharyngeal balloon and distal cuff by attaching the appropriate syringe to the connecting tube for each and:
 - a. If using the smaller ETDLAD, inflating 85 cc of air into the oropharyngeal balloon and 12 cc of air into the distal cuff;
 - b. If using the larger ETDLAD, inflating 100 cc of air into the oropharyngeal balloon and 15 cc of air into the distal cuff; and
 - c. Ensuring that the oropharyngeal balloon and distal cuff remain inflated.
3. Deflate the oropharyngeal balloon and distal cuff.
4. Lubricate the ETDLAD with water-soluble gel.
5. Hold the distal end of the ETDLAD bent for a few seconds to alleviate insertion by curving the ETDLAD.
6. Insert the ETDLAD (distal end first) gently in a curved downward motion by grasping the back of the tongue and jaw between thumb and forefinger and lifting the jaw, inserting until the printed ringmarks are positioned between the teeth or alveolar ridges. **DO NOT USE FORCE.**
7. Do one of the following:
 - a. If no resistance is encountered, go to step #8; or
 - b. If resistance is encountered, stop insertion, remove the ETDLAD, and do one of the following:

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- i. If this is the first attempt to insert the ETDLAD, go back to step #5 to attempt another insertion; or
 - ii. If this is the second attempt to insert the ETDLAD, maintain the patient's airway and ventilate using basic airway techniques; do NOT proceed to step #8.
8. Once the ETDLAD is inserted:
 - a. Use the larger syringe to inflate the oropharyngeal balloon with:
 - i. If using the smaller ETDLAD, 85 cc of air; or
 - ii. If using the larger ETDLAD, 100 cc of air;
 - b. Confirm that the oropharyngeal balloon remains inflated and observe the placement of the oropharyngeal balloon (should be in the posterior pharynx behind the hard palate);
 - c. Use the smaller syringe to inflate the distal cuff with:
 - i. If using the smaller ETDLAD, 5-12 cc of air; or
 - ii. If using the larger ETDLAD, 5-15 cc of air; and
 - d. Confirm that the oropharyngeal balloon remains inflated.
9. Attach the ventilation bag to the esophageal obturator lumen (the longer tube marked #1) and begin ventilations.
10. Listen for breath sounds in the lungs and gurgling sounds in the epigastrium and do one of the following:
 - a. If there are breath sounds in the lungs, continue to ventilate through the esophageal obturator lumen and go to step #12;
 - b. If there are no breath sounds in the lungs, and there are gurgling sounds in the epigastrium, move the ventilation bag to the tracheal lumen (the shorter tube marked #2) and begin ventilations; and
 - c. If there are no breath sounds in the lungs and no gurgling sounds in the epigastrium, deflate the oropharyngeal balloon with the larger syringe, deflate the distal cuff with the smaller syringe, and:
 - i. If this is the first time adjusting the ETDLAD, pull the ETDLAD out 2-3 cm, and go to step #8; or
 - ii. If this is the second time adjusting the ETDLAD, remove the ETDLAD, ventilate using basic airway techniques, and do not go to step #11.
11. Listen for breath sounds in the lungs and do one of the following:
 - a. If there are breath sounds in the lungs, continue to ventilate through the tracheal lumen and go to step #12; and
 - b. If there are no breath sounds in the lungs, deflate the oropharyngeal balloon with the larger syringe, deflate the distal cuff with the smaller syringe, remove the ETDLAD, and ventilate using basic airway techniques.
12. Continue patient ventilation and verify proper delivery of ventilations at least every 5 minutes by:
 - a. Listening for breath sounds on both sides of the chest,
 - b. Using a CO₂ detector and pulse oximeter and recording readings as part of patient vitals, and

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- c. Verifying chest rise with each ventilation.
- 13. Continually reassess patient for spontaneous respirations and pulse and remove the ETDLAD if:
 - a. The patient develops a gag reflex,
 - b. The patient becomes conscious, or
 - c. Ventilation is inadequate due to ETDLAD placement (then ventilate using basic airway techniques).